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(54) **Cleansing bar with high levels of emollients and particulate silica**

(57) Cleansing bars are formed from compositions containing an oil phase, silica and a cleansing agent. The silica is present in an amount to provide sufficient hardness to the composition to facilitate processing into a bar while maintaining good foaming despite a high oil content.

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**Description****FIELD OF THE INVENTION**

5 This disclosure relates generally to personal cleansing bars with lathering detergents and/or soaps. The bars have a high oil and/or wax content in combination with lathering additives and particulate silica to give the bars a desirable consistency.

**DESCRIPTION OF THE RELATED ART**

10 Personal cleansing with mild surface-active cleansing bar preparations has become a focus of great interest. The processability and smear properties of such bars have become a focus of even greater interest.

The fabrication of relatively pure "soap" bars is a well-worked-out engineering procedure involving milling, plodding and molding. Coco/tallow soap becomes quite plastic when warmed and can be easily plodded and molded under relatively low pressures. However, bars made with certain mild surfactants are very difficult to fabricate. The problems of formulating such bars are not limited to the performance characteristics of the finished bars. Thus, problems associated with mild synthetic detergent bars include bar processability, firmness, smear and mildness. For example, most synthetic detergents and detergent-filler combinations do not become plastic and the machinery for fabrication must be specially designed. See e.g., U.S. Patent No. 2,678,921.

20 Ideal processing should be fast and problem free in terms of milling, plodding and molding toilet bar formation. Most mild bar processings fall short in this respect.

Major drawbacks of most synthetic surfactant toilet bar formulations are harshness, poor lather, poor smear, and poor processability due to stickiness. It will be appreciated that processability, firmness, smear, mildness, lather, and rinsability make surfactant selection for mild personal cleansing bars a delicate balancing act. Thus, rather stringent requirements for formulating mild personal cleansing bars limit the choice of surfactants, and final formulations represent some degree of compromise. Mildness is often obtained at the expense of processability, effective cleansing, lathering, or rinsing, or vice versa. Processability is often obtained at the expense of smear.

A superior processable mild personal cleansing bar formulation with good mildness, good smear, good lather potential and good rinsability is difficult to formulate, but would be highly desirable.

**SUMMARY OF THE INVENTION**

30 It has now been discovered that silica in certain ratios with oils, waxes, petrolatum, esters in combination with detergent and/or soap additives can be formulated into cleansing bars of good hardness and acceptable processing characteristics. A unique feature of such compositions is that the high levels of oils, waxes, petrolatum, esters, etc. provide functional benefits to skin by providing good foam without defatting the skin. Silica gives the bar the necessary properties for commercial fabrication.

A novel finding of these compositions is the effect of high surface area silica on detergents from the groups consisting of sodium acyl isethionate, sodium alpha olefin sulfonates, disodium alkyl sulfosuccinate, soap base, tallow and coco sodium salts, and mixtures thereof, which produces a hard processable cleansing bar. Silica in the presence of these detergents, soaps and blends thereof, hardens the bars significantly. The hardening effect desirable for processing is observed at silica contents of a minimum of 1 part silica to 10 parts of oil on a w/w basis, varying according to the particular oils and waxes employed.

45 Particularly useful embodiments of the present cleansing bar compositions contain: an oily phase consisting of either mineral or vegetable oils with or without the addition of waxes; amorphous silica; and soap, detergent or a mixture thereof. The composition is capable of foaming when combined with water during use. The present compositions provide formulations of a flowable phase of oils or oils and waxes and silica which, upon combination with soap and/or detergents can be processed and stamped into a cleansing bar.

**DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

50 This disclosure relates generally to formulations of cleansing bars having high oil content and containing levels of a suitable hardening agent or agents in combination with soap and/or detergents and additives that give the bars a desirable consistency. More particularly, this disclosure is concerned with the discovery that cleansing bars with soap and/or detergents and high levels of oils can be formulated properly and fabricated using well-established equipment and procedures. In contrast, most synthetic detergents and detergent-filler combinations that are presently available do not become plastic and modifications have to be made to the manufacturing equipment and fatty acids and soap-like ingredients have to be added for suitable manufacturing.

The use of oils and other hydrophobic materials like petrolatum, paraffin and waxes is well known in the fabrication

of bars. However, because of their foam suppressing and softening properties, the use of oils and waxes is limited to low levels in cleansing bars. Furthermore, their use in synthetic detergent bars softens the product, making it very difficult to prepare a suitable commercial bar. A novel finding of the compositions described herein is that silica when used in certain ratios with oils, allows the preparation of cleansing bars that can be processed using established manufacturing methods while aiding with the foaming characteristics of the bars.

The first component of the compositions described herein is an oil phase which contains oils and, optionally, waxes. The oils can be mineral oils which are a purified mixture of liquid hydrocarbons obtained from petroleum. Normally, mineral oils are a mixture of oils of the methane series having the general formula  $C_nH_{2n+2}$ . Alternatively, the oils can be of vegetable origin, that is extracted from the seeds, fruits or leaves of plants and generally considered to be mixtures of mixed glycerides (e.g., sesame, avocado, olive, cottonseed, etc.). Mixtures of vegetable and mineral oils can also be used in the oil phase. The oils can be modified by the addition of paraffinic and microcrystalline waxes. A particularly useful oil phase is petrolatum. Petrolatum is a combination of mineral oils and wax which forms a white to faintly yellow unctuous mass of well recognized pharmaceutical properties. The preferred white petrolatum USP has a density of from about 0.82 to about 0.865, a melting point of from about 38° to 54°C and a refractive index of from about 1.460 to 1.474.

In particularly useful embodiments, the oil phase constitutes from about 15 to about 45 percent by weight of the final composition. Preferably, the oil phase is from about 20 to about 40 weight percent of the final composition.

The second component of the present compositions is an effective amount of silica. Silica gives the oil phase an appropriate degree of solid characteristic so that the resulting mixture can be processed with soaps, detergents or mixtures thereof. Any silica having a surface area greater than about 75 m<sup>2</sup>/g is suitable. Preferably, the silica is a powder and has a surface area of greater than 100 m<sup>2</sup>/gm. A particularly useful amorphous silica is fumed silica. Fumed silica is fumed silicon oxide, SiO<sub>2</sub>, a material which is produced by the hydrolysis of silicon tetrachloride vapor in a flame of hydrogen and oxygen. In the combustion process, molten spheres of silica are formed with extremely small particle size and enormous surface area. The resulting fumed silica is a fluffy white powder of very low bulk density, from 2.5 to 5 lbs./ft<sup>3</sup> and a surface area from 10 to 380 m<sup>2</sup>/gm. Other silicas having the desired surface area are also suitable; such as, for example precipitated silicas, silica fume or silica shells.

The particulate silica should be present in the composition in an amount sufficient to harden the composition. The hardness of the composition is conveniently ascertained by measuring penetration value as described more fully hereinafter. The ratio of oil phase to silica is preferably greater than about 2:1 more preferably in the range of about 4:1 to about 10:1. In particularly useful embodiments, the effective amount of particulate silica will range from about 3 percent by weight of the final composition to about 20 percent by weight of the final composition. Preferably, from about 5 to about 15 weight percent silica is present.

The third component of the present composition is a cleansing agent, e.g., a soap, a detergent or a mixture thereof. In a mixture with the other components described above, a composition is produced that can be processed and stamped into a cleansing bar and when combined with water exhibits foaming behavior. A particularly useful soap base suitable for personal care is a blend of tallow and coco sodium salts (80/20). Representative classes of detergents which have been found to be useful are the sodium acyl isethionates, the sodium alpha olefin sulfonates and disodium alkyl sulfosuccinates. However, this disclosure is not limited to these detergents.

The amount of cleansing agent included in the composition will vary depending on the exact detergent chosen, the identity of other components employed, and the desired physical and performance characteristics to be achieved. Normally, however, the amount of cleansing agent in particularly useful embodiments will range from about 25 to about 85 percent by weight of the final composition. Preferably, the cleansing agent is present in an amount from about 40 to about 75 percent by weight of the final composition.

The detergent chosen should be mild to the skin and relatively unaffected by ions which might be present in hard water. An unusual finding in connection with the compositions of this disclosure is that when adding silica to oils or oils and waxes (preferably molten), and processing the resulting composition through a blade blender and a screw mixer, the resulting mass can be compacted into a solid that has similar hardness characteristics as compacted soaps, detergents or mixtures thereof. This allows the blend of oils or oils and waxes and silica to be added to the soap, detergent or mixtures thereof without the resulting softening characteristics of adding oils by themselves.

In addition to the foregoing components, foam boosters may be incorporated into the present compositions. Suitable foam enhancers include potassium polymetaphosphate, sodium lauryl sulfoacetate, sodium lauryl sulfate, sodium lauryl sarcosinate, acyl glutamate and amides. These materials will enhance the foam produced when the present compositions are exposed to water during use.

The compositions may also contain conventional additives such as fragrance, color, fillers, preservatives, etc. Additionally, active ingredients may be incorporated in the present compositions. Such active ingredients include, but are not limited to deodorants, medicaments such as, for example coal-tar, benzoyl peroxide, vitamin A and vitamin E, and antibacterial ingredients such as, for example, triclosan, PVP-iodine and salicylic acid. The amount of active ingredient included in the present compositions should be an "effective amount" by which it is meant an amount sufficient to achieve a desired effect. The precise amount that is effective will depend upon the particular active ingredient and the

desired effect to be achieved. Normally, an effective amount will be from about 0.001 to about 10 weight percent, more preferably from about 0.01 to about 5.0 weight percent.

The order of addition of the ingredients of the present compositions is not critical. The compositions described herein are preferably prepared by first mixing the ingredients of the oil phase. Silica is then added to the oil phase. Heating and vigorous mixing may be used to aid in providing a homogenous oil/silica composition. Next, the cleansing agent is added to and mixed with the oil/silica mixture. At this point, the composition can be pelletized, if desired. Finally, any additives (fragrance, filler, active ingredient, etc.) are added to the composition. Once prepared, the composition can be formed into a bar using known techniques. One such technique is described, for example, in U.S. Patent No. 4,812,253, the disclosure of which is incorporated herein by this reference.

#### Examples 1-4

Examples 1-4 present formulations of the compacted mass that is produced when fumed silica and petroleum jelly are mixed and properly processed.

The compositions of Examples 1 to 4 show the effect that changing the ratios of silica to petrolatum has on the consistency of the compacted mass. Comparative example A has been included to show the consistency of pure petrolatum. The petroleum jelly employed in the Examples was designated White Petrolatum USP, G1951, and is commercially available from Witco, Greenwich, CT. The silica used in the Examples presented herein is a fumed silica sold under the trademark CAB-O-SIL, available from Cabot Corp., Tuscola, Ill. The results are presented in Table I.

Table I

Example No.	A	1	2	3	4
Petroleum Jelly USP	100.0	83.3	79.4	74.6	66.6
Fumed Silica	100.00	16.7	20.6	25.4	33.3
R=Si/PJ	0.0	0.2	0.26	0.34	0.5
Penetration Value (mmx10)	260.0	80.0	48.0	28.0	15.0

The consistency of the resulting paste or solid is tested using a Penetrometer (Universal Penetrometer, ASTM, (Precision 73510), Catalog No. 33541, Macalaster Bicknell Company of Connecticut, Inc., New Haven, Connecticut) which was equipped with a 300g cone. The amount of penetration of the cone into the sample was displayed by, and read off, the penetrometer in units of mm x 10. A lower penetration value indicates a harder mass. The samples were compacted by adding 20g of mixture to a die punch. The pasty or powdery mixture was then compressed to form discs 1½" wide by 5/8" high. Preferably, the compositions of this invention have penetration values of less than 50 mm x 10 and ratios of silica to oil phase greater than 0.1.

#### EXAMPLES 5-16

Examples 5 to 16 present the hardness of the compacted mass that is produced when fumed silica, petroleum jelly and soap are mixed and properly processed. The consistency of the resulting paste or solid is tested as previously described, that is by using a Penetrometer and measuring the hardness of the resulting 20g disc. Comparative examples B, C and D have been included to show the consistency of the commercial soap base with petrolatum and no fumed silica. The results are present in Table II.

Table II

Example No.	B	5	6	7	8
Petroleum Jelly USP	20.0	20.0	20.0	20.0	20.0
Fumed Silica	0.0	4.0	5.0	6.67	10.0
Soap Base*	80.0	76.0	75.0	73.33	70.0
R=Si/PJ	0.0	0.2	0.25	0.33	0.5
Penetration Value (mmx10)	80.0	35.0	28.0	25.0	15.0

Example No.	C	9	10	11	12
Petroleum Jelly USP	30.0	30.0	30.0	30.0	30.0
Fumed Silica	0.0	6.0	7.5	10.0	15.0
Soap Base*	76.0	64.0	62.5	60.0	55.0
R=Si/PJ	0.0	0.2	0.25	0.33	0.5
Penetration Value (mmx10)	135.0	58.0	45.0	28.0	15.0

\*Commercial soap base composition containing:

Sodium Tallowate	68%
Sodium Cocoate	17.0%
Water	12.5
Glycerin	1.0
Pentasodium Pentetate	<1.0
Tetrasodium etidronate	<1.0

TABLE II - cont'd

Example No.	D	13	14	15	16
Petroleum Jelly USP	40.0	40.0	40.0	40.0	40.0
Fumed Silica	0.0	8.0	10.0	13.3	20.0
Soap Base*	60.0	52.0	50.0	46.7	40.0
R = Si/PJ	0.0	0.2	0.25	0.33	0.5
Penetration Value (mmx10)	270.0	65.0	50.0	28.0	15.0

The resulting mixtures required at least 1 part of fumed silica for 10 parts of petroleum jelly for the bars with the lower levels of petroleum jelly (20%) to have a penetration of approximately 50mm x 10. Higher levels of petroleum jelly (40%) require 1 part of fumed silica to 4 parts of petroleum jelly to the hardness of the bars to values of 50mm x 10. It will be pointed out that the hardness of the soap mass processed without fumed silica and without petroleum jelly is 15mm x 10. This value is approached by all the blends of petroleum jelly, silica and soap, once the ratio of fumed silica to petroleum jelly has a value of 0.5, or higher.

#### EXAMPLES 17-28

Examples 17-28, present the penetration values of the compacted mass that is produced when fumed silica, petroleum jelly and a commercial blend of syndet and soap are mixed and properly processed. The consistency of the paste or solid is tested as previously described. Comparative examples E, F & G have been included to show the consistency of the commercial soap/syndet base with petrolatum and no fumed silica.

Table III

Example No.	E	17	18	19	20
Petroleum Jelly USP	20.0	20.0	20.0	20.0	20.0
Fumed Silica	0.0	4.0	5.0	6.67	10.0
Soap/Syndet Base**	80.0	76.0	75.0	73.33	70.0
R=Si/PJ	0.0	0.2	0.25	0.33	0.5
Penetration Value (mmx10)	90.0	35.0	30.0	23.0	15.0

Example No.	F	21	22	23	24
Petroleum Jelly USP	30.0	30.0	30.0	30.0	30.0
Fumed Silica	0.0	6.0	7.5	10.0	15.0
Soap/Syndet Base**	70.0	64.0	62.5	60.0	55.0
R=Si/PJ	0.0	0.2	0.25	0.33	0.5
Penetration Volume (mmx10)	115.0	51.0	42.0	27.0	15.0

\*\*Soap/Syndet commercial base, as follows:

Sodium cocoylisethionate	45 %
Stearic acid	30.0
Sodium Tallowate	10.0
Water	5.0
Sodium stearate	3.0
Sodium cocoate	2.0
Sodium chloride	2.0
less than 1 %	

Sodium dodecyl benzene sulfonate, PEG-20, sodium isethionate, titanium dioxide, pentasodium pentetate, tetrasodium etidronate.

TABLE III - Con'd

Example No.	G	25	26	27	28
Petroleum Jelly USP	40.0	40.0	40.0	40.0	40.0
Fumed Silica	0.0	8.0	10.0	13.3	20.0
Soap/Syndet Base**	60.0	52.0	50.0	46.7	40.0
R=Si/PJ	0.0	0.2	0.25	0.33	0.5
Penetration Value (mmx10)	120.0	55.0	43.0	30.0	15.0

The resulting mixtures require at least 1.5 parts of fumed silica for 10 parts of petroleum jelly for bars with the lower levels of petroleum jelly (20%) while the higher levels of petroleum jelly (40%) require 1 part of fumed silica to 4 parts of petroleum jelly to increase hardness of the syndet/soap bars to values less than 50mm x 10. It will be pointed out that the hardness of the syndet/soap mass processed without fumed silica and without petroleum jelly is 15mm x 10. This value is approached by all blends of petroleum jelly, silica and syndet/soap, once the ratios of fumed silica to petroleum jelly has a value of 0.5 or higher.

#### EXAMPLES 29-40

Examples 29-40 present the hardness of the compacted mass that is produced when fumed silica, petroleum jelly and a commercial blend of syndet are mixed and properly processed. Comparative examples H, I & J have been included to show the consistency of the commercial syndet base with petroleum and no fumed silica.



EXAMPLES 29-40

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Table IV					
Example No.	H	29	30	31	32
Petroleum Jelly USP	20.0	20.0	20.0	20.0	20.0
Fumed Silica	0.0	4.0	5.0	6.67	10.0
Syndet Base***	80.0	76.0	75.0	73.33	70.0
R=Si/PJ	0.0	0.2	0.25	0.33	0.5
Penetration Value (mmx10)	125.0	50.0	40.0	27.0	15.0

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Example No.	I	33	34	35	36
Petroleum Jelly USP	30.0	30.0	30.0	30.0	30.0
Fumed Silica	0.0	6.0	7.5	10.0	15.0
Syndet Base***	70.0	64.0	62.5	60.0	55.0
R=Si/PJ	0.0	0.2	0.25	0.33	0.5
Penetration Value (mmx10)	210.0	40.0	25.0	18.0	15.0

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\*\*\*Commercial syndet base

Sodium cocoylisethionate 50%

Stearic acid 33%

Water 10%

Sodium isethionate 5%

Titanium dioxide 1.0

Sodium chloride 1.0

TABLE IV - Con'd

Example N .	J	37	38	39	40
Petroleum Jelly USP	40.0	40.0	40.0	40.0	40.0
Fumed Silica	0.0	8.0	10.0	13.3	20.0
Syndet Base***	60.0	52.0	50.0	46.7	40.0
R=Si/PJ	0.0	0.2	0.25	0.33	0.5
Penetration Value (mmx10)	250.0	80.0	55.0	30.0	15.0

The consistency of the paste or solid is tested as previously described. The resulting mixtures require at least 1 part of fumed silica for 5 parts of petroleum jelly for bars with the lower levels of petroleum jelly (20%) while the higher levels of petroleum jelly (40%) require 1 part of fumed silica to 3.5 parts of petroleum jelly to increase hardness of the syndet bars to values of 50mm x 10. It will be pointed out that the hardness of the syndet mass processed without fumed silica and petroleum jelly is 15mm x 10. This value is approached by all blends of petroleum jelly, silica and syndet, once the ratio of fumed silica to petroleum jelly has a value of 0.5 or higher (that is 1 part of fumed silica to 2 parts of petroleum jelly).

The following are additional specific, non-limiting examples of compositions in accordance with the present invention.

#### EXAMPLE 41

	%	250g
Petroleum Jelly	40.00	100.00
Fumed silica	8.00	20.00
Sodium cocoyl isethionate	52.00	130.00
Comments: Penetration = 50; Si/PJ=0.2; foams well. The sodium cocoyl isethionate used in this and other Examples is available under the designation Tauranol I-78 from Finetex, Inc., Elmwood Park, New Jersey.		

EXAMPLE 42

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	%	250g
Petroleum Jelly	40.00	100.00
Fumed Silica	10.50	26.25
Sodium cocoyl isethionate	49.50	123.75
Comments: Penetration = 40; Si/PJ=0.26; foams well.		

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EXAMPLE 43

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	%	250g
Petroleum Jelly	40.00	100.00
Fumed Silica	13.00	32.50
Sodium cocoyl isethionate	47.00	117.50
Comments: Penetration = 35; Si/PJ=0.325; foams well.		

35 EXAMPLE 44

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	%	250g
Petroleum Jelly	30.00	75.00
Fumed Silica	6.00	15.00
Sodium cocoyl isethionate	64.00	160.00
Comments: Penetration = 35; Si/PJ=0.2; foams well.		

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EXAMPLE 45

	%	250g
Petroleum Jelly	30.00	75.00
Fumed Silica	8.00	20.00
Sodium cocoyl isethionate	62.00	155.00
Comments: Penetration = 30; Si/PJ=0.267; foams well.		

EXAMPLE 46

	%	250g
Petroleum Jelly	30.00	75.00
Fumed Silica	10.00	25.00
Sodium cocoyl isethionate	60.00	150.00
Comments: Penetration = 23; Si/PJ=0.33; foams well.		

EXAMPLE 47

	%	250g
Petroleum Jelly	20.00	50.00
Fumed Silica	4.00	10.00
Sodium cocoyl isethionate	76.00	190.00
Comments: Penetration = 25; Si/PJ=0.2; good foam.		

EXAMPLE 48

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	%	250g
Petroleum Jelly	20.00	50.00
Fumed Silica	5.50	13.75
Sodium cocoyl isethionate	74.50	186.25
Comments: Penetration = 17; Si/PJ=0.275; foams well.		

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EXAMPLE 49

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	%	250g
Petroleum Jelly	20.00	50.00
Fumed silica	6.50	16.25
Sodium cocoyl isethionate	73.50	183.75
Comments: Penetration = 15; Si/PJ=0.325; foams well.		

35 EXAMPLE 50

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	%	250g
Petroleum Jelly	40.00	100.00
Fumed Silica	8.00	20.00
Disodium Lauryl Sulfosuccinate	52.00	130.00
Comments: Penetration = 45; Si/PJ=0.2; foams well. The disodium lauryl sulfosuccinate used in this and other Examples is available under the designation Monamate LA-100 from Mona Industries, Patterson, N.J.		

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EXAMPLE 51

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	%	250g
Petroleum Jelly	40.00	100.00
Fumed Silica	10.50	26.25
Disodium Lauryl Sulfosuccinate	49.50	123.75
Comments: Penetration = 35; Si/PJ=0.26; foams well.		

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EXAMPLE 52

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	%	250g
Petroleum Jelly	40.00	100.00
Fumed Silica	13.00	32.50
Disodium Lauryl Sulfosuccinate	47.00	117.50
Comments: Penetration = 25; Si/PJ=0.325; foams well.		

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EXAMPLE 53

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	%	250g
Petroleum Jelly	30.00	75.00
Fumed Silica	6.00	15.00
Disodium Lauryl Sulfosuccinate	64.00	160.00
Comments: Penetration = 30; Si/PJ=0.2; foams well.		

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EXAMPLE 54

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	%	250g
Petroleum Jelly	30.00	75.00
Fumed Silica	8.00	20.00
Disodium Lauryl Sulfosuccinate	62.00	155.00
Comments: Penetration = 22; Si/PJ=0.27; foams well.		

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EXAMPLE 55

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	%	250g
Petroleum Jelly	30.00	75.00
Fumed Silica	10.00	25.00
Disodium Lauryl Sulfosuccinate	60.00	150.00
Comments: Penetration = 15; Si/PJ=0.33; foams well.		

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EXAMPLE 56

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	%	250g
Petroleum Jelly	20.00	50.00
Fumed Silica	4.00	10.00
Disodium Lauryl Sulfosuccinate	76.00	190.00
Comments: Penetration = 20; Si/PJ=0.2; foams well.		

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EXAMPLE 57

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	%	250g
Petroleum Jelly	20.00	50.00
Fumed Silica	6.50	16.25
Disodium Lauryl Sulfosuccinate	73.50	183.75
Comments: Penetration = 14; Si/PJ=0.325; foams well.		

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EXAMPLE 58

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	%	250g
Petroleum Jelly	20.00	50.00
Fumed Silica	5.50	13.75
Disodium Lauryl Sulfosuccinate	74.50	186.25
Comments: Penetration = 18; Si/PJ=0.275; foams well.		

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EXAMPLE 59

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	%	250g
Petroleum Jelly	30.00	75.00
Fumed Silica	8.00	20.00
Sodium cocoyl isethionate	31.00	77.50
Disodium Lauryl Sulfosuccinate LA-100	31.00	77.50
Comments: Penetration = 35; Si/PJ=0.27; foaming characteristics good.		

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EXAMPLE 60

	%	250g
Petroleum Jelly	40.00	100.00
Fumed Silica	8.00	20.00
Sodium cocoyl isethionate	26.00	65.00
Disodium Lauryl Sulfosuccinate	26.00	65.00
Comments: Penetration = 52; Si/PJ=0.2; very good foaming characteristics.		

EXAMPLE 61

	%	250g
Petroleum Jelly	40.00	100.00
Fumed Silica	8.00	26.25
Sodium cocoyl isethionate	24.75	61.90
Disodium Lauryl Sulfosuccinate	24.75	61.90
Comments: Penetration = 42; Si/PJ=0.2625; very good foaming characteristics.		

EXAMPLE 62

	%	250g
Petroleum Jelly	40.00	100.00
Fumed Silica	13.00	32.50
Sodium cocoyl isethionate	23.50	58.75
Disodium Lauryl Sulfosuccinate	23.50	58.75
Comments: Penetration = 30; Si/PJ=0.325; very good foaming characteristics.		

EXAMPLE 63

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	%	250g
Petroleum Jelly	30.00	75.00
Fumed Silica	6.00	15.00
Sodium cocoyl isethionate	32.00	80.00
Disodium Lauryl Sulfosuccinate	32.00	80.00
Comments: Penetration = 42; Si/PJ=0.2; very good foaming characteristics.		

EXAMPLE 64

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	%	250g
Petroleum Jelly	30.00	75.00
Fumed Silica	10.00	25.00
Sodium cocoyl isethionate	30.00	75.00
Disodium Lauryl Sulfosuccinate	30.00	75.00
Comments: Penetration = 27; Si/PJ=0.33; very good foaming characteristics.		

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EXAMPLE 65

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	%	250g
Petroleum Jelly	20.00	50.00
Fumed Silica	4.00	10.00
Sodium cocoyl isethionate	38.00	95.00
Disodium Lauryl Sulfosuccinate	38.00	95.00
Comments: Penetration = 26; Si/PJ=0.2; very good foaming characteristics.		

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EXAMPLE 66

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	%	250g
Petroleum Jelly	20.00	50.00
Fumed Silica	5.50	13.75
Sodium cocoyl isethionate	37.50	93.75
Disodium Lauryl Sulfosuccinate	37.00	92.50
Comments: Penetration = 20; Si/PJ=0.275; very good foaming characteristics.		

EXAMPLE 67

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	%	250g
Petroleum Jelly	20.00	50.00
Fumed Silica	6.50	13.25
Sodium cocoyl isethionate	37.00	92.50
Disodium Lauryl Sulfosuccinate	36.50	91.50
Comments: Penetration = 17; Si/PJ=0.375; very good foaming characteristics.		

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EXAMPLE 68

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	%	250g
Petroleum Jelly	20.00	50.00
Fumed Silica	4.00	10.00
Sodium C <sub>14-16</sub> Olefin Sulfonate	76.00	190.00
Comments: Penetration = 34; Si/PJ=0.2; foams well.		

EXAMPLE 69

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	%	250g
Petroleum Jelly	20.00	50.00
Fumed Silica	5.50	13.75
Sodium C <sub>14-16</sub> Olefin Sulfonate	74.50	186.25
Comments: Penetration = 25; Si/PJ=0.275; foams well.		

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EXAMPLE 70

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	%	250g
Petroleum Jelly	20.00	50.00
Fumed Silica	6.50	16.25
Sodium C <sub>14-16</sub> Olefin Sulfonate	73.50	183.75
Comments: Penetration = 21; Si/PJ=0.325; good foam.		

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EXAMPLE 71

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	%	250g
Petroleum Jelly	30.00	75.00
Fumed silica	6.00	15.00
Sodium C <sub>14-16</sub> Olefin Sulfonate	64.00	160.00
Comments: Penetration = 47; Si/PJ=0.2; good foam.		

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EXAMPLE 72

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	%	250g
Petroleum Jelly	30.00	75.00
Fumed silica	8.00	20.00
Sodium C <sub>14-16</sub> Olefin Sulfonate	62.00	155.00
Comments: Penetration = 25; Si/PJ=0.267; good foam.		

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EXAMPLE 73

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	%	250g
Petroleum Jelly	30.00	75.00
Fumed silica	10.00	25.00
Sodium C <sub>14-16</sub> Olefin Sulfonate	60.00	150.00
Comments: Penetration = 22; Si/PJ=0.33; good foam.		

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EXAMPLE 74

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	%	250g
Petroleum Jelly	40.00	100.00
Fumed silica	8.00	20.00
Sodium C <sub>14-16</sub> Olefin Sulfonate	52.00	130.00
Comments: Penetration = 48; Si/PJ=0.2; good foam.		

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EXAMPLE 75

	%	250g
Petroleum Jelly	40.00	100.00
Fumed silica	10.50	26.25
Sodium C <sub>14-16</sub> Olefin Sulfonate	49.50	123.75
Comments: Penetration = 32; Si/PJ=0.2625; good foam.		

EXAMPLE 76

	%	250g
Petroleum Jelly	40.00	100.00
Fumed silica	13.00	32.50
Sodium C <sub>14-16</sub> Olefin Sulfonate	49.50	123.75
Comments: Penetration = 25; Si/PJ=0.325; good foam.		

EXAMPLE 77

	%	500g
Petroleum Jelly	30.00	150.00
Fumed silica	8.00	40.00
Sodium cocoyl isethionate	15.00	75.00
Disodium Lauryl Sulfosuccinate	15.00	75.00
Potassium Polymetaphosphate	.40	2.00
Corn Starch	15.80	79.00
Soap base	15.80	79.00
Comments: Penetration = 25; Si/PJ=0.267; good foam. See Table II for Composition of soap base.		

EXAMPLE 78

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	%	500g
Petroleum Jelly	30.00	150.00
Fumed silica	8.00	40.00
Sodium cocoyl isethionate	15.00	75.00
Disodium lauryl sulfosuccinate	15.00	75.00
Potassium polymetaphosphate	0.4	2.00
Soap base	31.60	158.00
Comments: Penetration = 42; Si/PJ=0.267; sticky, soft.		

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EXAMPLE 79

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	%	500g
Petroleum Jelly	30.00	150.00
Fumed silica	8.00	40.00
Sodium cocoyl isethionate	15.00	75.00
Disodium lauryl sulfosuccinate	15.00	75.00
Potassium polymetaphosphate	.40	2.00
Syndet/Soap base	31.60	158.00
Comments: Penetration = 40; Si/PJ=0.267; too tacky, sticky. See Table III for formulation of syndet/soap base.		

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EXAMPLE 80

	%	250g
Petroleum Jelly	30.00	75.00
Fumed silica	8.00	20.00
Sodium cocoyl isethionate	15.00	37.50
Disodium lauryl sulfosuccinate	15.00	37.50
Potassium polymetaphosphate	.40	1.00
Confectioners' sugar	15.80	39.50
Soap base	15.80	39.50
Comments: Penetration = 36; Si/PJ=0.267; See Table II for composition of soap base.		

EXAMPLE 81

	%	250g
Petroleum Jelly	30.00	75.00
Fumed silica	8.00	20.00
Sodium cocoyl isethionate	15.00	37.50
Disodium lauryl sulfosuccinate	32.00	80.00
Soap base	15.00	37.50
Comments: Penetration = 40; Si/PJ=0.267; good foaming characteristics. See Table II for composition of soap base.		

EXAMPLE 82

	%	250g
Avocado Oil	30.00	75.00
Fumed silica	8.00	20.00
Sodium cocoyl isethionate	62.00	155.00
Comments: Penetration = 24; Si/Oil=0.267; foams very well.		



EXAMPLE 83

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	%	250g
Sesame Oil	30.00	75.00
Fumed silica	8.00	20.00
Sodium cocoyl isethionate	62.00	155.00
Comments: Penetration = 24; Si/Oil=0.267; foams very well, but tacky.		

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EXAMPLE 84

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	%	250g
Mineral Oil	30.00	75.00
Fumed silica	8.00	20.00
Sodium cocoyl isethionate	62.00	155.00
Comments: Si/Oil=0.267; Foams well.		

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EXAMPLE 85

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	%	250g
Polydecene	30.00	75.00
Fumed silica	8.00	20.00
Sodium cocoyl isethionate	62.00	155.00
Comments: Si/Oil=0.267; Foams well.		

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EXAMPLE 86

	%	250g
Petroleum Jelly	30.00	75.00
Fumed silica	8.00	20.00
Sodium cocoyl isethionate	57.00	142.50
C <sub>12-15</sub> Alkyl Benzoate	5.0	12.50
Comments: Si/PJ=0.267; the C <sub>12-15</sub> Alkyl Benzoate used in this and other Examples is available under the designation FIN-SOLV-TN from Finetex, Inc., Elmwood Park, NJ.		

EXAMPLE 87

	%	250g
Petroleum Jelly	20.00	50.00
Fumed silica	8.00	20.00
Sodium cocoyl isethionate	57.00	142.50
C <sub>12-15</sub> Alkyl Benzoate	5.0	12.50
Benzoyl Peroxide	10.0	25.00
Comments: Si/PJ=0.267.		

EXAMPLE 88

	%	250g
Petroleum Jelly	20.00	50.00
Fumed silica	8.00	20.00
Sodium cocoyl isethionate	57.00	142.50
Triclosan	.5	1.25
Comments: Si/PJ=0.267.		

EXAMPLE 89

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	%	200g
Petroleum Jelly	25.00	50.00
silica shells (Zelec Sil from Dupont)	6.66	13
Sodium cocoyl isethionate	35.00	70.00
Titanian dioxide	1.0	2.0
Potassium polymetaphosphate	0.5	1.0
PEG 8000 NF	31.84	63.68
Comments: Si/PJ=0.266.		

20 While the above description contains many specific details of compositions and has in accordance with this invention, these specific details should not be construed as limitations on the scope of the invention, but merely as exemplifications of preferred embodiments thereof. Those skilled in the art will envision many other possible variations that all within the scope and spirit of the invention as defined by the claims appended hereto.

25 **Claims**

## 1. A cleansing bar composition comprising

30 an oil phase containing oil or a mixture of oil and wax;  
silica having a surface area of at least 75 m<sup>2</sup>/gm; and  
a cleansing agent selected from the group consisting of soaps, synthetic detergents and combinations thereof,  
the ratio of the oil phase to the silica on a weight to weight basis being between about 2:1 to about 10:1.

## 2. A cleansing bar composition comprising:

35 an oil phase containing oil or a mixture of oil and wax;  
a cleansing agent selected from the group consisting of soaps, synthetic detergents and combinations thereof;  
and  
silica in an amount sufficient to provide a penetration value for the composition of up to about 50.

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3. A composition as in claim 2 wherein the silica has a surface area of at least 75 m<sup>2</sup>/gm.

## 4. A composition as in claims 1 or 2 wherein the silica is selected from the group consisting of precipitated silicas, silica fume and silica shells.

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## 5. A composition as in claims 1 or 2 wherein the oil phase comprises an oil selected from the group consisting of vegetable oils and mineral oils.

## 6. A composition as in claims 1 or 2 wherein the oil phase comprises petrolatum.

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## 7. A composition as in claims 1 or 2 wherein the oil phase is present in an amount from about 15 to about 45 weight percent based on the entire composition.

## 8. A composition as in claims 1 or 2 wherein the weight ratio of oil phase to particulate silica is from about 2:1 to about 10:1.

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## 9. A composition as in claim 1 or 2 wherein the cleansing agent comprises a synthetic detergent selected from the group consisting of sodium acyl isethionates, sodium alpha olefin sulfonates and disodium alkyl sulfosuccinates.

10. A composition as in claim 1 further comprising a foam booster.

11. A composition as in claim 10 wherein said foam booster is selected from the group consisting of potassium polymetaphosphate, sodium lauryl sulfate, sodium lauryl sulfoacetate, sodium lauryl sarcosinate, acyl glutamate and amides.

12. A composition as in claims 1 or 2 wherein the cleansing agent is present in an amount from about 25 to about 85 weight percent based on the entire composition.

13. A composition as in claims 1 or 2 further comprising an effective amount of an active ingredient selected from the group consisting of coal tar, benzoyl peroxide, vitamin A, vitamin E, triclosan, PVP-Iodine and salicylic acid.

14. A method of preparing a cleansing bar comprising:

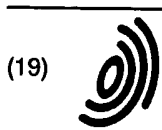
adding silica having a surface area of at least  $75 \text{ m}^2/\text{gm}$  to an oil phase containing oil and optionally wax to provide a mixture;

combining the mixture with a cleansing agent selected from the group consisting of soaps, synthetic detergents and combinations thereof to provide a cleansing composition having a penetration value of about 50 or less; and

forming the cleansing composition into a bar.

15. A method as in claim 14 wherein the silica is added to the oil phase at a weight ratio of about 1:2 to about 1:10.

16. A method as in claim 14 wherein the cleansing agent combined with the mixture comprises a synthetic detergent selected from the group consisting of sodium acyl isethionates, sodium alpha olefin sulfonates and disodium alkyl sulfosuccinates.



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(54) **Cleansing bar with high levels of emollients and particulate silica**

(57) Cleansing bars are formed from compositions containing an oil phase, silica and a cleansing agent. The silica is present in an amount to provide sufficient hardness to the composition to facilitate processing into a bar while maintaining good foaming despite a high oil content.

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# EUROPEAN SEARCH REPORT

Application Number  
EP 97 10 8153

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E	US 5 783 536 A (DALTON JAMES ET AL) 21 July 1998 * claims 1-3,5 * * column 4, line 1 - line 63 * * column 5, line 14 - line 28 * * column 6, line 23 - column 7, line 34 * * column 9, line 18 - line 41 *	1-13	
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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 4 January 1999	Examiner Neys, P
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>			

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